

CLAIMS

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A swivel fitting, which comprises:

a body including a proximal, contact section with a first contact surface and a distal stem section extending from the contact section;

said body including proximal and distal ends located at said contact and stem sections respectively;

a body bore extending through said body and open at said ends;

a housing including an outer surface and a receiver including a second contact surface; said receiver receiving said contact section with said contact surfaces in engagement; and said contact surfaces being slidable with respect to each other whereby said body is

pivotably received in said housing.

2. The fitting according to claim 1, which includes:

said first and second contact surfaces having frusto-spherical configurations;

said stem section having a generally cylindrical configuration;

said body including an axis extending coaxially through said bore;

said housing having an annular configuration; and

said body being multi-axially pivotably received in said housing.

3. The fitting according to claim 2, which includes:

said housing including an annular seal including said receiver contact surface and an annular sleeve receiving said seal.

4. The fitting according to claim 3 wherein said body comprises a material chosen from among: metal, plastic, glass, rubber, elastomer, clay and concrete.

5. The fitting according to claim 3 wherein said housing comprises a material chosen from among: metal, plastic, glass, rubber, elastomer, clay and concrete.

6. The fitting according to claim 3 wherein said seal comprises a material chosen from among: metal, plastic, glass, rubber and elastomer.

7. The fitting according to claim 3 wherein said body and said housing assembly have circular cross-sectional configurations.

8. The fitting according to claim 1 wherein said body and said housing assembly have polygonal cross-sectional configurations.

9. The fitting according to claim 1 wherein said stem section includes means for connecting same in sealing engagement with an in-line component.

10. The fitting according to claim 9 wherein said stem section connecting means is chosen from among external threads, internal threads, external barbs, internal barbs, adhesive, gasket, compression seal and weldment.

11. The fitting according to claim 1 wherein said housing outer surface includes means for connecting same in sealing engagement with an in-line component.

12. The fitting according to claim 11 wherein said housing outer surface connecting means is chosen from among external threads, internal threads, external barbs, internal barbs, adhesive, gasket, compression seal and weldment.

13. A fluid connection system for connecting first and second fluid components positioned in displaced misalignment or dynamic relationship with respect to each other, which system comprises:

first and second multi-axis swivel fittings connected to said first and second components respectively;

each said fitting including: a body with a proximal contact section having a frusto-spherical contact surface and a distal stem section extending coaxially therefrom; proximal and distal body ends located at said contact and stem sections respectively; a body bore extending between and open at said body ends; and a housing assembly including an annular seal forming a socket with a frusto-spherical contact surface and an annular sleeve receiving said seal;

said contact surfaces being in sliding engagement with said body contact sections multi-axially pivotably received in respective said sockets;

a first component connector fluidically connecting said first component to said first fitting; an intermediate connector fluidically connecting said first and second fittings; a second component connector fluidically connecting said second fitting to said second component; and

said fittings being independently, multi-axially pivotable whereby said system is adapted for universal, adjustable offset alignment of said components.

14. The system according to claim 13, which includes:

said first component connector being connected to said first fitting sleeve;

said intermediate connector being connected to said body distal ends of said first and second fittings; and

said second component connector being connected to said second fitting sleeve.

15. The system according to claim 14, which includes:

said first component connector comprising a bell end mounted on said first component and including an open end receiving said first fitting sleeve;

said intermediate connector having a tubular configuration with first and second ends receiving said distal body ends of said first and second fittings respectively; and

said second component connector comprising a bell end mounted on said second component and including an open end receiving said second fitting sleeve.

16. The system according to claim 13, which includes:

said first component connector comprising a bell end mounted on said first component and including an open end receiving said first fitting sleeve;
said intermediate connector comprising a neck with a hollow, tubular configuration and integrally formed with said first and second fitting bodies;
said bores extending continuously through said bodies and said neck; and
said second component connector comprising a bell end mounted on said second component and including an open end receiving said second fitting sleeve.

17. The system according to claim 16, which includes:

said bodies comprising a unitary component with a maximum diameter at said body contact surfaces and a reduced diameter at said neck; and
said seal contact surfaces forming frusto-spherical configurations for slidably receiving said body contact surfaces in sealing engagement.

18. The system according to claim 13 wherein each said body distal end includes an annular lip forming a stop adapted for engaging a respective seal with said fitting in an extreme angular orientation thereof.

19. In combination with a sewer system having a main, subsurface sanitary sewer pipe and multiple inlet fittings adapted for mounting plumbing fixtures, the improvement of a multi-axis swivel connection system for interconnecting the inlet fittings with the pipe and for accommodating misalignment therebetween, which connection system comprises:

first and second multi-axis, swivel fittings;

each said fitting including: a body with a proximal contact section having a frusto-spherical contact surface and a distal stem section extending coaxially therefrom; proximal and distal body ends located at said contact and stem sections respectively; a body bore extending between and open at said body ends; and a housing assembly including an annular seal forming a socket with a frusto-spherical contact surface and an annular sleeve receiving said seal;

said seal contact surfaces being in sliding engagement with respective body contact surfaces with said body contact sections multi-axially pivotably received in respective sockets;

a saddle connector mounted on said pipe and including a bell end receiving said first fitting sleeve, such saddle connector being adapted for transferring discharge from said connection system to said pipe;

an intermediate connector fluidically connecting said stem sections of said first and second fittings;

an upper connector connected to said inlet fitting and including a bell end receiving said second fitting sleeve, said upper connector receiving discharge from said plumbing fixture and transferring same to said connection system; and said fittings being independently, multi-axially pivotable whereby said system is adapted for universal, adjustable offset alignment of said components.

20. The connection system according to claim 19 wherein said intermediate connector comprises a tubular component with first and second ends receiving said stem sections of said first and second fittings respectively.